Marshall Star, July 11, 2012 Edition

MARSHALL STAR

In This Week's Star

Goldman to Retire as Director of the Marshall Center

From a NASA news release

Arthur E. "Gene" Goldman, director of the Marshall Space Flight Center, is retiring from the agency to accept a management position at Aerojet in Huntsville, effective Aug. 3. Robin Henderson, Marshall's associate director, will serve as acting center director following his departure.

Image right: Gene Goldman, director of the Marshall Center, announces his retirement to team members during an all-hands meeting July 9 (NASA/MSFC)

His departure ends a 22-year career with NASA that began in 1990 as a project engineer in the Marshall space shuttle project integration office.

Goldman has been the acting center director at Marshall since March 5 when Robert Lightfoot began his assignment as NASA acting associate administrator at NASA Headquarters. Previously, beginning March 2010, Goldman served as the center's deputy director.

"Gene's technical expertise and management skills will be missed, not only at Marshall, but across the entire agency," said

NASA Administrator Charles Bolden. "We are grateful for his service to NASA and wish him the best in his next endeavor."

Goldman describes his time at NASA as the finest in his professional career.

"Working for NASA and supporting the Space Shuttle Program was a dream come true for me," said Goldman. "It has been an honor and a privilege to work on NASA's human spaceflight programs, both at Marshall and across the agency for more than two decades."

Prior to his most recent posts at Marshall, Goldman served as the director of the Stennis Space Center from 2008 until 2010 and deputy director at Stennis from 2006 to 2008.

"I believe the center is in a great position from the spaceflight and science programs we have," said Goldman during an all-hands meeting July 9 with Marshall team members. "So I'm leaving on a good note."

For Goldman and Henderson's full biographies, visit http://www.nasa.gov/centers/marshall/about/leadership.html.

For more information about Marshall, visit http://www.nasa.gov/marshall.

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NASA's Space Launch System Integration Team Aims to 'Beat the Schedule'
By Amie Cotton and Bill Hubscher

While the Space Launch System, or SLS, is still in the early design process, one of the critical elements is already under construction at the Marshall Space Flight Center and will fly on the first Orion spacecraft test flight in two short years.

Image left: Three members of the Space Launch System team discuss the machining of an aluminum adapter ring similar to the design needed for Exploration Flight Test-1 at the Marshall Space Flight Center in Building 4705. From left, SLS Spacecraft & Payload Integration Manager David Beaman, Adapter Subsystem Manager Brent Gaddes and Multi-Purpose Crew Vehicle to Stage Adapter Lead Myron Tapscott.

(NASA/Emmett Given)

When NASA flies the Orion module on Exploration Flight Test 1, known as EFT-1, in 2014, designers and engineers will record reams of data about its performance, from launch and flight, to re-entry and landing. A Delta IV rocket operated by United Launch Alliance at the Kennedy Space Center will propel the capsule into space. However, because the Delta rocket was not originally designed and built to launch Orion, engineers with the SLS Spacecraft & Payload Integration team at the Marshall Center are building innovative adapter hardware to connect the two. This same hardware design will be used on the flexible configurations of the SLS.

"Our entire team is excited to come to work every day because we're building the hardware that will actually fly," said David Beaman, spacecraft and payload integration manager for the SLS program. "We have the unique opportunity to design this hardware early and provide it for Orion's flight test, saving time and money in a few different ways. We took less than a month to pull together an approved drawing and design for the aluminum integration rings and have passed several major milestones. By designing the adapter for both missions, we provide an affordable solution to keep our human exploration mission moving forward. It's a great collaboration between our two programs."

Image right: David Osborne, a machinist with the Space Systems Department - Mechanical Fabrication Branch at Marshall, takes measurements on a prototype aluminum ring, which shares the design of adapter rings to be used on the first flight test of the Orion spacecraft in 2014. (NASA/Emmett Given)

The designers of the SLS adapter rings are using a unique Marshall Center capability to save on schedule and cost. The master machinists in the Mechanical Fabrication Branch of the Space Systems Department are using the world's largest multi-axis milling machine to build the ring prototypes in Building 4705.

"By leveraging the state-of-the-art, one-of-a-kind milling machine installed at the Marshall Center for building hardware, there's going to be a cost savings," said Patrick Hull, the multi-purpose crew vehicle/stage adapter lead designer for SLS. "The manufacturing team who run this facility are demonstrating their ability to produce large-scale flight hardware built in-house."

Image left: As an adapter ring designed for the Space Launch System is machined at Marshall, Spacecraft & Payload Integration Subsystem Manager Brent Gaddes, left, Multi-Purpose Crew Vehicle/Stage Adapter -- or MSA -- Lead Designer Patrick Hull and MSA Manufacturing Lead Myron Tapscott discuss the intricate design work going into the SLS. (NASA/Emmett Given)

Even the aluminum material used to create the prototypes of the integration rings is a good example of economic savings through recycling.

"We've taken an existing ring that was forged in a fixed diameter and made a smaller ring out of it to meet our needs," said Brent Gaddes, adapter subsystem manager with SLS. "This proof-of-concept also was delivered ahead of schedule and we're excited about the progress we're making. By delivering them early, we have more time to double and even triple-check our process and design."

Image right: David Osborne, a machinist in the Space Systems Department - Mechanical Fabrication Branch, takes a close look at a recent cut on an aluminum adapter ring. The blue, seven-axis milling tool, left, is the largest of its kind in the world. (NASA/Emmett Given)

When the Orion spacecraft takes its first real test flight in 2014, it will travel 3,600 miles into space -- 15 times farther away from Earth than the International Space Station.

"When you fly a vehicle for the first time you want to know as much as possible and the EFT-1 mission will allow our SLS team to learn about the structural, mechanical and electrical interfaces -- the internal environment between Orion and the launch vehicle," said Garry Lyles, chief engineer for the Space Launch System at Marshall. "Our team will capture flight data that will be useful to calibrate guidance, navigation and control algorithms and structural loads for SLS; separation dynamics between Orion and the launch vehicle; and overall vehicle stability -- all vital data to reduce risk and increase reliability and sustainability for America's next launch vehicle."

Image left: A specialized state-of-the-art milling tool grinds away at an aluminum ring with a diameter of nearly 20 feet at Marshall. (NASA/Emmett Given)

Orion will carry astronauts farther into space than ever before, sustaining the crew during space travel and providing emergency abort capability and safe re-entry from deep space. Orion will launch atop the SLS, NASA's next flagship rocket currently under design. The SLS will power the Orion spacecraft on deep space missions to asteroids, the moon, Mars and other destinations in our solar system. The first flight test of the full-scale SLS is planned for 2017.

The first SLS mission, Exploration Mission 1, in 2017 will launch an uncrewed Orion to demonstrate the integrated system performance of the SLS rocket and spacecraft prior to a crewed flight. The second SLS mission, Exploration Mission 2, is targeted for 2021 and will launch Orion and a crew of up to four American astronauts.

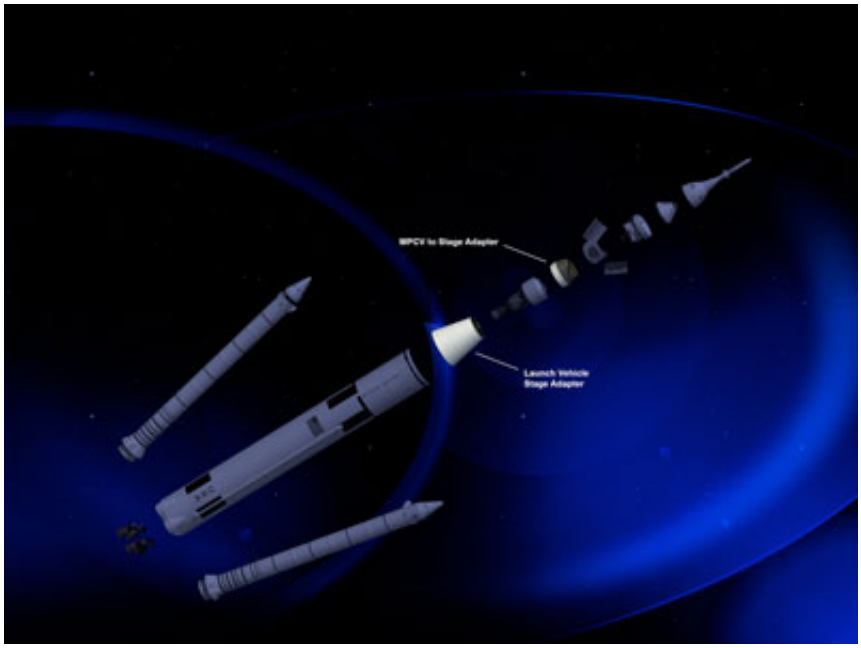

Image right: An expanded view of an artist rendering of the 70-metric-ton configuration of the Space Launch System. (NASA/MSFC)

The Orion Program is managed by the Johnson Space Center. The SLS Program is managed by the Marshall Center. Both programs are managed by the Exploration Systems Development Division within the Human Exploration and Operations Mission Directorate at NASA Headquarters.

For more information about the Space Launch System, visit http://www.nasa.gov/sls.

For more information about the Orion spacecraft and EFT-1, visit http://www.nasa.gov/orion.

Cotton and Hubscher, both AI Signal Research Inc. employees, support the Office of Strategic Analysis & Communications.

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Dexter Brooks, Director of Federal Sector Programs, to Hold Session About Unconscious Bias at Marshall on July 18

On July 18, Dexter Brooks -- director of the Federal Sector Programs within the U.S. Equal Employment Opportunity Commission in the Office of Federal Operations -- will hold a session titled "Unconscious Bias" at the Marshall Space Flight Center at 1 p.m. in Morris Auditorium, Building 4200. All team members are invited to attend.

He will discuss what inclusion means and how everyone needs to be inclusive in his or her attitudes toward people, while learning to reflect deeply about unconscious biases that may exist. He will share how to stay true to your values while remaining inclusive and respectful to all people.

Before Brooks was named to his current role, he was the Federal Sector Programs' federal training and outreach coordinator, and its attorney advisor. He was responsible for establishing the Federal Sector Training Institute, which provides a variety of courses to the Equal Employment Opportunity Commission, known as EEOC, community. He also served as primary contact to the EEOC's federal sector stakeholders, providing hundreds of outreach sessions throughout the country.

Brooks' career with EEOC began in 1998 as staff attorney in the Office of Federal Operations Appellate Review Program. Before joining the commission, he served as an attorney advisor for the U.S. Department of Labor's Office of Administrative Law Judges.

The Federal Sector Programs has a unique role in assisting federal administrative agencies in the development of strategies designed to prevent discrimination so that federal employees can compete fairly. The EEOC has the authority to investigate

charges of discrimination against employers who are covered by the law. For more information about this commission, visit here.

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Coverage Set For Next International Space Station Crew Launch

NASA Television will provide extensive coverage of prelaunch, launch and docking activities of the next trio of crew members who will fly to the International Space Station.

NASA TV coverage of the Soyuz TMA-05M launch begins at 8:30 p.m. CDT July 14. NASA Flight Engineer Sunita Williams, veteran Soyuz Commander Yuri Malenchenko of the Russian Federal Space Agency and Flight Engineer Akihiko Hoshide of the Japan Aerospace Exploration Agency will launch to the station at 9:40 p.m. from the Baikonur Cosmodrome in Kazakhstan.

The trio will arrive at the station late July 16, joining NASA Flight Engineer Joe Acaba and two Russian cosmonauts, Expedition 32 Commander Gennady Padalka and Flight Engineer Sergei Revin, who have been aboard the orbiting laboratory since mid-May. Williams, Malenchenko and Hoshide, who also will be part of the Expedition 33 crew starting in September, will return to Earth in mid-November.

The full schedule of the Soyuz prelaunch, launch and docking coverage on NASA TV public and media channels includes (all times are Central):

July 11
1 p.m. -- Video file of Expedition 32/33 crew activities in Baikonur and Soyuz TMA-05M mating operations

July 12
1 p.m. -- Video file of Expedition 32/33 Soyuz TMA-05M rollout to the launch pad in Baikonur

July 13
1 p.m. -- Video file of Expedition 32/33 Russian State Commission meeting and final prelaunch crew news conference in Baikonur

July 14
8:30 p.m. -- Expedition 32/33 Soyuz TMA-05M launch coverage begins (launch at 9:40 p.m.); includes video b-roll of crew prelaunch activities and launch replays from Baikonur
11:30 p.m. -- Video file of Expedition 32/33 Soyuz TMA-05M prelaunch and launch video b-roll and post-launch interviews

July 16
11:15 p.m. -- Expedition 32/33 Soyuz TMA-05M docking coverage begins (docking at 11:50 p.m. followed by post-docking news conference from Mission Control in Korolev, Russia)

July 17
2:15 a.m. -- Expedition 32/33 Soyuz TMA-05M hatch opening and welcoming ceremony coverage begins (ceremony scheduled at 2:25 a.m.)
4 a.m. -- Video file of Expedition 32/33 Soyuz TMA-05M docking, hatch opening and welcoming ceremony

For updated NASA TV coverage times, visit http://www.nasa.gov/ntvnews.

For more information about the International Space Station, visit http://www.nasa.gov/station.

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Has the Speediest Pulsar Been Found?
NASA news release

Researchers using three different telescopes -- NASA's Chandra X-ray Observatory and the European Space Agency's XMM-Newton in space, and the Parkes radio telescope in Australia -- may have found the fastest moving pulsar ever seen.

The evidence for this potentially record-breaking speed comes, in part, from the features highlighted in this composite image. X-ray observations from Chandra (green) and XMM-Newton (purple) have been combined with infrared data from the 2MASS project and optical data from the Digitized Sky Survey (colored red, green and blue, but appearing in the image as white).

The large area of diffuse X-rays seen by XMM-Newton was produced when a massive star exploded as a supernova, leaving behind a debris field, or supernova remnant known as SNR MSH 11-16A. Shock waves from the supernova have heated surrounding gas to several million degrees Kelvin, causing the remnant to glow brightly in X-rays.

The Chandra image shown in the inset ("X-ray close-up") reveals a comet-shaped X-ray source well outside the boundary of the supernova remnant. This source consists of a point-like object with a long tail trailing behind it for about three light years. The bright star nearby and also the one in SNR MSH11-16A are both likely to be foreground stars unrelated to the supernova remnant.

The point-like X-ray source was discovered by the International Gamma-Ray Astrophysics Laboratory, or INTEGRAL, and is called IGR J11014-6103, or IGR J11014 for short. It may be a rapidly spinning, super-dense star -- known as a "pulsar", a type of neutron star -- that was ejected during the explosion. If so, it is racing away from the center of the supernova remnant at millions of miles per hour.

The favored interpretation for the tail of X-ray emission is that a pulsar wind nebula, that is, a "wind" of high-energy particles produced by the pulsar, has been swept behind a bow shock created by the pulsar's high speed. (A similar case was seen in another object known as PSR B1957+20 (http://chandra.harvard.edu/photo/2003/b1957/closer_look.html).

The elongated emission is pointing toward the center of MSH 11-61A where the pulsar would have been formed, supporting the idea that the Chandra image is of a pulsar wind nebula and its bow shock. Another interesting feature of the Chandra image, also seen with XMM-Newton, is the faint X-ray tail extending to the top right. The cause of this feature is unknown, but similar tails have been seen from other pulsars that also do not line up with the pulsar's direction of motion.

Based on earlier observations, astronomers estimate that the age of MSH 11-61A is approximately 15,000 years, and it lies at a distance of about 30,000 light years away from Earth. Combining these values with the distance that the pulsar has appeared to have traveled from the center of the MSH 11-61A, astronomers estimate that IGR J11014 is moving at a speed between 5.4 million and 6.5 million miles per hour.

The only other neutron star associated with a supernova remnant that may rival this in speed is the candidate found in the

supernova remnant known as G350.1-0.3. The speed of the neutron star candidate in this system is estimated to lie between 3 and 6 million miles per hour (http://chandra.harvard.edu/photo/2012/g350/). The high speeds estimated for both IGR J11014 and the neutron star candidate in G350.1-0.3 are preliminary and need to be confirmed. If they are confirmed, explaining the high speeds of the neutron star presents a severe challenge to existing models for supernova explosions.

One important caveat in the conclusion that IGR J11014 may be the fastest moving pulsar is that pulsations have not been detected in it during a search with the Commonwealth Scientific and Industrial Research Organization Parkes radio telescope. This non-detection is not surprising for a pulsar located about 30,000 light years away.

However, there are other pieces of evidence that support the pulsar interpretation. First, the lack of detection of a counterpart to the X-ray source in optical or infrared images supports the idea that it is a pulsar, since such objects are very faint at these wavelengths. Also, there are no apparent differences in the brightness of the source between XMM-Newton observations in 2003 and the Chandra observations in 2011, behavior that is expected if IGR J11014 is a pulsar. Finally, the X-ray spectrum of the source, that is, its signature in energy, is similar to what astronomers expect to see for a pulsar.

These results were published in the May 10 issue of The Astrophysical Journal Letters. The authors were John Tomsick and Arash Bodaghee of the University of California, Berkeley; Jerome Rodriguez and Sylvain Chaty of the University of Paris, CEA Saclay; Fernando Camilo of Columbia University; Francesca Fornasini of UC Berkeley; and Farhid Rahoui of the Harvard-Smithsonian Center for Astrophysics.

The Marshall Space Flight Center manages the Chandra program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

(X-ray: NASA/CXC/UC Berkeley/J. Tomsick et al and ESA/XMM-Newton; Optical: DSS, 2MASS/UMass/IPAC-Caltech/NASA/NSF)

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Marshall's Bob Williams, Travis Martin Graduate from 2012 System Engineering Leadership Development Program Class

Nine systems engineers from across NASA, including two from the Marshall Space Flight Center, graduated from the Systems Engineering Leadership Development Program, or SELDP, in June.

Image right: From left are NASA Chief Engineer Mike Ryschkewitsch, Marshall's Travis Martin and NASA Administrator Charlie Bolden. (NASA)

The program's graduation featured presentations by each SELDP participant to the NASA Engineering Management Board, observations by Boeing Chief Engineer Paul Lambertson on the differences and similarities of systems engineering across government and industry, and a visit from NASA Administrator Charlie Bolden.

The graduation week marked the culmination of a yearlong program that provided participants with knowledge, skills and experiences aimed at preparing them for the challenges of systems engineering leadership at NASA. After a rigorous application process, the program kicked off in the spring of 2011. Once participants completed baseline assessments to identify strengths and areas for development, they embarked on a year of learning, developing and practicing the qualities of a systems engineering leader: creativity, curiosity, self-confidence, persistence and an understanding of human dynamics.

Program activities included mentoring and coaching, technical training, leadership development exercises and forums. The 2012 SELDP class also conducted benchmarking exercises at organizations including Boeing, Costco and Blue Origin.

The core of the SELDP experience was a hands-on developmental assignment at a new center. Participants took on systems engineering roles that expanded their experience base and challenged them to incorporate new knowledge and skills in an unfamiliar organizational setting.

Travis Martin -- Marshall's high-speed data acquisition systems engineer, and a design and manufacturing engineer -- was assigned to the Jet Propulsion Laboratory and served as the assistant to the lead project systems engineer on the Soil Moisture Active Passive, or SMAP, program.

Image left: From left are NASA Chief Engineer Mike Ryschkewitsch, Marshall's Bob Williams and NASA Administrator Charlie Bolden. (NASA)

Bob Williams, a Marshall systems engineer, went to NASA Headquarters where he served as the lead for Exploration Systems Development, or ESD, Technology Investments on ESD, Cross-Program Systems Integration.

NASA Chief Engineer Mike Ryschkewitsch congratulated the class on completing the program. "You're no longer the expert in electrical engineering or materials," he said. "What [your team needs] to know is that you can listen to them all and adjudicate them." He shared insight into his own career, making tough decisions, and leading a team. "You are going to be trusted repeatedly over the course of your careers with a big responsibility," he added. "You're being asked to lead people and you will need to ask, what do they need from you?"

SELDP grew out of a need identified by NASA leadership and the Office of the Chief Engineer for an agency-wide leadership development program that would help identify and accelerate the development of high-potential system engineers, with a focus on specific leadership behaviors and technical capabilities that are critical to success in the NASA context. Headed by Christine Williams of the NASA Academy of Program/Project & Engineering Leadership, known also as APPEL, SELDP aims to develop and improve leadership skills and technical capabilities.

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Clean Energy for Space Propulsion and Power Colloquy to be held July 12

The Oak Ridge Huntsville Partnership Office and the University of Alabama in Huntsville are holding a Clean Energy for

Space Propulsion and Power Colloquy from 1:30-4:30 p.m., July 12, at UAHuntsville's Shelby Center, Room 301.

Dr. Wernher von Braun, the Marshall Space Flight Center's first center director, envisioned nuclear rockets docked at the International Space Station as the most feasible vehicles for man's trip to and return from Mars. Speakers will open the colloquy with a replay of von Braun's thoughts.

Dr. Mike Houts of the Marshall Center will discuss "Present & Future Requirements for Nuclear Propulsion & Power."

Dr. Low Qualls of the Oak Ridge National Laboratory will discuss "Past, Present & Future Science & Technology on Nuclear Propulsion & Power."

Dr. Jason Cassibry of the UAHuntsville Propulsion Research Center will present "A Concept for Fusion Propulsion."

Chris Robinson of the Y-12 National Security Complex will discuss "Y-12's Role in the TerraPower Fusion Concept."

An open dialogue with a question-and-answer discussion will follow the presentations.

The event is open to the public. RSVP to Shawn Hays at 256-722-5557 or at shays@akinscrisp.com. For more information, team members can visit here.

Find this article at:

http://www.nasa.gov/centers/marshall/about/star/index.html